TITLE OF THE INVENTION

INFORMATION PROCESSING APPARATUS, SYSTEM AND METHOD

5   FIELD OF THE INVENTION

       This invention relates to an information processing
apparatus, method and system for transmitting document
information within a document management system by
10   electronic mail.

                BACKGROUND OF THE INVENTION

       In general, when document information in a document
15   management system is transmitted by an electronic mail
application, the document information itself or the
result of expanding the document into an image having a
certain format is transmitted.
       However, if the amount of data of the document
20   perse that is to be transmitted is large, a great load
is placed upon the electronic mail system. Regarding an
image document stored in the document management system,
it is possible to add additional information such as
annotation information and user's own property
25   information to expanded data. However, when an actual
document is attached to an electronic mail, it is not

easy to display an actual document and its additional information with explicit indication of the relationship between them. If the actual document can be referred in the format or state in which it was stored in the

5　document management system, the above problem will be solved. However, in order to perform the above operation, it is necessary to ascertain the storage location of the document through a different method and the procedure involved is troublesome.

10　Furthermore, in a case where the document is referred to in the format in which it was stored in the document management system, there are instances where user registration is necessary in order to access the system in which the document exists. The result is poor

15　operability.

SUMMARY OF THE INVENTION -

Accordingly, an object of the present invention is

20　to make it possible to transmit specific information such as the storage location of a document (object) and access privilege without transmitting the actual substance of the object or a file in which the content of the object has been converted to an image, thereby

25　making it possible to display the document easily on the receiving side without increasing the load upon the

electronic mail system.

Another object of the present invention is to make it possible to transmit the storage location of a document as the main body of electronic mail so that the document can be displayed easily on the receiving side.

Another object of the present invention is to make it possible for a receiving party to gain temporary access to a document without requiring that the receiving party register as a user with the system in which the document has been stored.

A further object of the present invention is to make it possible for the transmitting side to limit the version of documents accessed by a receiving party, whereby diverse access control can be realized with facility.

A further object of the present invention is to make it possible for a receiving party to access a document within a folder the same as that containing a document specified by the transmitting party, whereby diverse access control can be realized with facility.

According to the present invention, the foregoing objects are attained by providing an information processing apparatus capable of transmitting electronic mail, comprising: designating means for designating a desired object to be attached to electronic mail; acquisition means for acquiring access information

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relating to the object designated by the designating
means; and generating means for generating electronic
mail information which includes the access information
acquired by the acquisition means.

5   According to another aspect of the present
invention, the foregoing objects are attained by
providing an information processing apparatus capable of
receiving electronic mail, comprising: extraction means
for extracting access information contained in
10   electronic mail that has been received; access means for
accessing an object based upon the access information
extracted by the extraction means; and display means for
presenting a display that corresponds to the object
based upon content of the object accessed by the access
15   means.

According to the present invention, the foregoing
objects are attained by providing an information
processing system in which electronic mail can be
transmitted and received between information processing
20   apparatus, comprising: generating means for generating
electronic mail which includes access information
relating to an object to be attached to electronic mail;
communication means for sending and receiving the
electronic mail generated by the generating means; and
25   access means for accessing the object based upon the
access information contained in the electronic mail

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received via the communication means.

Other features and advantages of the present invention will be apparent from the following description taken in conjunction with the accompanying

5   drawings, in which like reference characters designate the same or similar parts throughout the figures thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

10.

The accompanying drawings, which are incorporated in an constitute a part of the specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the

15 invention.

Fig. 1 is a system block diagram illustrating the configuration of an information processing system to which there is applied a scheme for giving notification of document storage information according to an

20 embodiment of the present invention;

Fig. 2 is a block diagram showing the details of construction of a PC and database server in the information processing system which applies the scheme for giving notification of document storage information

25 according to this embodiment;

Fig. 3 is a diagram showing an overview of a main

window for displaying an at-a-glance view of objects in a document management system or image management system which applies a scheme for giving notification of document storage information according to this

5   embodiment of the present invention;

Fig. 4 is a diagram illustrating an access-key configuration screen;

Fig. 5 is a diagram illustrating an access-key format, prior to encryption, generated based upon

10   content configured by the access-key configuration screen shown in Fig. 4;

Figs. 6A, 6B and 6C are diagrams useful in describing examples of screen displays, as well as the operation thereof, in a case where a received access key

15   is used in the scheme for giving notification of document storage information according to this embodiment;

Fig. 7 is a flowchart useful in describing processing for transmitting an access key according to

20   this embodiment; and

Figs. 8A and 8B are flowcharts illustrating document display processing that is based upon an access key.

25   DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment of the present invention will now be described in detail in accordance with the accompanying drawings.

Fig. 1 is a system block diagram illustrating the configuration of an information processing system to which there is applied a scheme for giving notification of document storage information according to an embodiment of the present invention. The information processing system comprises at least two computers (PC-A 201 and PC-B 202), a database server 203 and an electronic mail server 204. The computers 201 and 202, which function as mail clients, can be ordinary personal computers or workstations. In this embodiment the database server 203 stores documents and the like to be transmitted by electronic mail. The electronic mail server 204 stores and distributes electronic mail that has been transmitted in the system. The computers 201, 202, database server 203 and main server 204 are connected by a network 205.

Fig. 2 is a block diagram showing the details of construction of a personal computer and database server in the information processing system which applies the scheme for giving notification of document storage information according to this embodiment. As shown in Fig. 2, a personal computer (PC) 300 corresponds to the personal computer 201 or 202 in Fig. 1. The PC 300

includes a display unit 301, an input unit 302, a
central processing unit 303, an external storage device
304, a memory 305 and a network interface 306. A
database server 310 corresponds to the database server

5   203 in Fig. 1 and includes a network interface 311, a
central processing unit 312, a memory 313 and an
external storage device 314. The network interfaces 306
and 311 are connected by a network cable.

The display unit 301 in the PC 300 has a CRT or LCD

10   and presents various displays under the control of the
central processing unit 303. The input unit 302
includes a keyboard and a pointing device, for example,
and is for making various inputs to the central
processing unit 303. The central processing unit 303

15   implements various processing, described later, by
executing a control program that has been stored in the
memory 305. The external storage device 304 is a large-
capacity non-volatile memory typified by a hard disk or
the like. The memory 305, which is constituted by a RAM

20   or the like, provides a working area for the central
processing unit 303. The network interface 306 is for
making a connection to the Internet by a modem, etc.,
via a telephone line.

The network interface 311 in the database server

25   310 is for making a connection to the Internet, by way
of example. The central processing unit 312 implements

various processing, described later, by executing a control program that has been stored in the memory 313. The external storage device 314 is a large-capacity non-volatile memory typified by a hard disk or the like.

5   Fig. 3 is a diagram showing an overview of a main window for displaying an at-a-glance view of objects in a document management system or image management system which applies a scheme for giving notification of document storage information according to this

10   embodiment.

Fig. 3 shows a main window 400. In Fig. 3, objects in a storage area α are displayed in a thumbnail format. In this example, there are two objects, namely A and B. It should be noted that the storage area α corresponds

15   to, e.g., a directory or folder. Buttons 401 are for selecting whether the format of the display presented in an at-a-glance display area 403 is the thumbnail format or a list format. Buttons 402 are for changing the storage area to be displayed in the at-a-glance view.

20   The at-a-glance display area 403 displays objects. More specifically, this is an area in which objects in the storage area selected by the buttons 402 are displayed in an at-a-glance view in a format (thumbnail or list) selected by the buttons 401. Fig. 3 illustrates a state

25   in which a thumbnail display has been selected. An icon 404 corresponds to an electronic mail application. An

object displayed as a thumbnail image or an icon
displayed in a list in the at-a-glance display area 403
may be dragged and dropped on the icon 404 of the
electronic mail application, thereby making it possible
5   to transmit electronic mail to which information
relating to this object has been attached.

It should be noted that an object that has been
dragged and dropped on the icon 404 of the electronic
mail application has version information. In a case
10   where the transmitting party has not allowed the
receiving side to access all versions, only an object
having the version information can be accessed. This
will become clear from a description rendered later.

Fig. 4 is a diagram illustrating an access-key
15   configuration screen 500 displayed when one object
displayed in at-a-glance form in Fig. 3 has been dropped
on the icon 404 of the electronic mail application.
This screen enables the setting of information necessary
to access the object and to store the information as an
20   access key. The object shall be referred to as a
document below. Moreover, in this specification, it
will be assumed that the document includes a text file,
an image file, etc.

The access-key configuration screen 500 shown in
25   Fig. 4 includes a user name 501 that makes it possible
to access this system (e.g., a database server in which

the applicable document resides). More specifically, in
addition to users who have already been registered with
the system, it is possible to set a special "access-key
user". Thus, even a user who has not registered as a

5   user with the database storing the document can, by
having possession of an access key that includes
"access-key user", refer to the document within the
database. If "NONE" is selected in the area of user
name 501, user-name and password queries are made when

10   access to the database is attempted, whereby a person
who has not registered as a user can be denied access to
the database.

The access-key configuration screen 500 is
configured in the following manner:

15   Area 502: Sets the privilege [to allow only read
(reference) or to allow both read and write (update)]
granted to the "access-key user" to access the
applicable document.

Area 508: Sets the privilege to access other

20   versions regarding the applicable document;

Area 503: Sets whether or not other documents in
the folder containing the document can be displayed when
the document is referred to using the access key. In a
case where "DISPLAY ALL DOCUMENTS" has been checked,

25   both the access privilege set in area 502 and the access
privilege set in the area 508 are similarly validated

with regard to all documents.

Area 504: Sets whether or not a period of validity is to be set for the access key that has been created.

Area 505: Sets the period of validity.

5 　 If an OK button 506 is pressed (clicked) after the above-mentioned items have been set, an access-key file is created using the configured content being displayed on the access-key configuration screen 500 and the file is attached to an electronic mail file. If a cancel 10 button 507 is clicked, then processing is suspended without the creation of access-key file.

Fig. 5 is a diagram illustrating an access-key format 510 prior to encryption of an access-key file generated based upon content configured by the access- 15 key configuration screen shown in Fig. 4. Numeral 510 in Fig. 5 denotes the access-key format prior to encryption. Since the access key usually is encrypted, it cannot be referred to or edited directly by a text editor.

20 　 In Fig. 5, "ABSOLUTE STORAGE LOCATION OF DOCUMENT" is where the absolute storage location of a dropped document in the database system is set. "USER NAME" is either "ACCESS-KEY USER" or "NONE" entered in the area of user name 501. "PASSWORD" is where a password 25 established by the database system is set only in a case where an access-key user has been set. "ACCESS

PRIVILEGE" is set only in a case where "ACCESS-KEY USER"
has been set. In this example, either "READ/WRITE" or
"READ" is set. "APPLICABLE-DOCUMENT ALL-VERSION ACCESS
ENABLE FLAG" is where a value (enable/disable) specified

5   using the check box area 508 in Fig. 4 is set. "SAME-
FOLDER ALL-DOCUMENT DISPLAY FLAG" is where a value
(on/off) specified using the check box area 503 of Fig.
4 is set. "KEY-FILE VALIDITY DATE" is where the period
of validity set in area 505 in Fig. 4 is saved only in a

10   case where the check box area 504 of Fig. 4 is checked.
"ID OF APPLICABLE DOCUMENT" is where the ID of the
selected document is set in a form that includes the
version number. If "SAME-FOLDER ALL-DOCUMENT DISPLAY
FLAG" is ON, the IDs of all documents present in the

15   same folder are added on in a form that includes the
version numbers.

Figs. 6A, 6B and 6C are diagrams useful in
describing examples of screen displays, as well as the
operation thereof, in a case where a received access key

20   is used in the scheme for giving notification of
document storage information according to this
embodiment.

Fig. 6A shows a main window in which an at-a-glance
view of documents in a storage area Z is displayed in

25   thumbnail form. Here one document (C) is being
displayed in an at-a-glance display area 601.

Fig. 6B illustrates the window of an electronic mail application. A main window 610 of the electronic mail application indicates an overview of a main window displayed by the electronic mail application. As in the manner of a window of an ordinary electronic mail application, the window 610 is divided into a mail header area 611 which displays a mail header, a mail body area 612 which displays the body of mail, and an attachment data area 613 which indicates attachment data. An icon 614 corresponds to an access-key file generated through the above-described procedure and attached to this electronic mail.

If the icon 614 corresponding to the access-key file that has been attached to the received mail is dragged and dropped on the thumbnail image display area 601, the database is accessed based upon the information that has been saved in this access-key file. It is assumed here that the access-key file of icon 614 has been generated on the side of the transmitting party of this electronic mail by dropping document A in storage area α of the personal computer on the transmitting side onto the icon 404 of the electronic mail application in the manner shown in Fig. 3. In this case the window display of the personal computer on the receiving side changes from the content shown in Fig. 6A to the content shown in Fig. 6C. Here, it is assumed that documents A

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and B exist in the storage area α in the personal
computer on the transmitting side and the "SAME-FOLDER
ALL-DOCUMENT DISPLAY FRAG" has been turned on.
Accordingly, document A, for which an attachment in the
5   storage area α (of the personal computer on the side
transmitting the electronic mail) has been specified,
and document B, which is contained in the same folder,
are being displayed in the main window indicated at 620
in Fig. 6C.

10   It should be noted that the electronic mail system
and electronic mail application being employed in this
system are a well-known system and application.

Processing according to this embodiment will be
described next.

15   Fig. 7 is a flowchart useful in describing
processing for transmitting an access key according to
this embodiment.   The flowchart of Fig. 7 will be
referred to in order to describe processing executed by
the central processing unit 303 of this system for
20   creating an access-key file and for attaching the
created access-key file to electronic mail in a case
where a document is dropped onto the icon of the
electronic mail application.   It will be assumed in this
embodiment that the user of the personal computer 201
25   attaches document information in the database server 203
to electronic mail and sends this electronic mail to the

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user of the personal computer 202, that the electronic

mail in such case is accumulated in the electronic mail

server 204 and that the electronic mail server 204

notifies the personal computer 202 of the fact the

5   electronic mail arrived. Alternatively, it will be

assumed that the electronic mail is sent from the

electronic mail server 204 to the user of the personal

computer 202

First, at step S101 in Fig. 7, the absolute storage

10   location of a document (document A in storage area α in

this example) specified by the operation illustrated in

Fig. 3 is acquired through the central processing unit

312 of the database server 310 via the network

interfaces 306 and 311. Next, at step S102, the

15   privilege to access this document is acquired at step

S102 in a manner similar to that of step S101. Then, at

step S103, the privilege to access the folder containing

this document is acquired through a similar procedure.

This is followed by step S104, at which the access-

20   key configuration screen 500 is displayed to allow the

user to enter the conditions for creation of the access

key. It should be noted that the access privilege 502

is restricted so as not to be less stringent than the

conditions acquired at step S102. For example, if the

25   document access privilege acquired at step S102 is only

"READ", then "READ/WRITE" in access privilege area 502

is dimmed beforehand to make the selection thereof impossible. 'Similarly, if the folder access privilege acquired at step S103 is "DISPLAY APPLICABLE DOCUMENT ONLY", then the check box of area 503 is dimmed

5   beforehand to make selection thereof impossible.

Next, at step S104a, the ID of the selected document is acquired in a format that includes the version. Furthermore, if the "SAME-FOLDER ALL-DOCUMENT DISPLAY FLAG" is ON, then the IDs of all documents

10   present in the same folder are acquired in a format that includes the versions.

This is followed by step S105, at which it is determined whether "ACCESS-KEY USER" has been specified as the user name in area 501 of Fig. 4. If the decision

15   is "NO", then control proceeds to step S107. If, on the other hand, it is found at step S105 that "ACCESS-KEY USER" has been specified as the user name,- control proceeds to step S106. Here the password of "ACCESS-KEY USER" is acquired through the central processing unit

20   312 of database server 310.

An access-key file of the kind shown in Fig. 5 is created at step S107 based upon the information obtained above and the file is subjected to compression processing. The compressed access-key file is attached

25   to the electronic mail application at step S108 and the electronic mail is transmitted at step S109. It should

be noted that the operation at step S109 may be executed on the side of the electronic mail application.

Thus, an access-key file corresponding to a desired document is transmitted by electronic mail.

5   Described next with reference to Figs. 8A and 8B will be document display processing executed by the central processing unit 303 of this system in a case where the icon 614 corresponding to the access-key file has been dropped on the at-a-glance display area 601

10 from the attachment data area 613 of the electronic mail application at the apparatus on the side that receives the electronic mail. Figs. 8A and 8B are flowcharts illustrating document display processing based upon the access key. In this example, the processing described

15 is that executed when electronic mail that has been attached by the user of the personal computer 201 is stored in the electronic mail server 204, the electronic mail server 204 notifies the user of the personal computer 202 that there is incoming electronic mail, the

20 user of the personal computer 202 opens this electronic mail and displays the document in accordance with the access key.

The compressed access-key file corresponding to the icon 614 is uncompressed, the access content (access

25 information) that has been saved in this file is acquired and the content is stored in memory 305 at step

S701. This is followed by step S702, at which it is
determined whether the date of operation falls within
the period indicated by "KEY-FILE VALIDITY DATE" in the
access content. If the date of operation falls outside
5   this period, and error message is displayed at step S710
and processing is terminated. If it is determined at
step S702 that the date of operation falls within the
period of validity, then it is determined at step S703
whether the user name is contained in the access
10   content. If the access content does not have the user
name (in case of "NONE" for user name), this means that
the document can be referred to only by a registered
user. At step S704, therefore, a display for entering
the user name and password is displayed to allow the
15   user to set the same.

        This is followed by step S705, at which log-in to
the database is performed based upon the content that
has been saved in the access key and the content that
has been entered at step S704. In a case where the user
20   name 501 has been set, log-in to the database is
performed based upon the user name and password
contained in the access-key format 510 (Fig. 5). Next,
it is determined at step S706 whether log-in succeeded.
If log-in failed, an error message is displayed at step
25   S710 and processing is terminated. If it is determined
at step S706 that log-in succeeded, the specified

document is read in at step S707 in accordance with the access content. It is then determined at step S708 whether read-in succeeded. If it is determined that read-in failed, control proceeds to step S709a. In this

5   case, an applicable document does not exist and therefore a display is presented to the effect that the document cannot be accessed. Control thenceforth proceeds to step S711 so that processing relating to display of other documents in this folder may be

10   executed.

If it is determined at step S708 that read-in succeeded, then control proceeds to step S708a, at which it is determined whether the all-version flag is ON or not. If the all-version flag is ON, i.e., if a version

15   check will not be carried out, control proceeds directly to step S709. On the other hand, if the all-version flag is OFF, i.e., if a version check will be carried out, control proceeds to step S708b. Here it is determined whether the version information of the ID

20   that has been stored in the access key matches the version information of the applicable document. If it is determined that a match has been achieved, control proceeds to step S709. Here a display relating to the applicable document is presented and control proceeds to

25   step S711. In regard to step S709, if the method of presenting the display in the main window is in

accordance with the thumbnail format, a thumbnail image

of the document is displayed in the at-a-glance display

area 601. If the method of presenting the display in

the main window is in accordance with the list format,

5   the content of a list is displayed in the at-a-glance

display area 601. The thumbnail image (or item in the

list) corresponding to the applicable document is

displayed in such a manner that it can be distinguished

as being the specified document. In this example, it is

10   assumed that the applicable thumbnail image enclosed by

a red border.

If it is determined at step S708b that the two

items of version information do not match, control

proceeds to step S709a, at which a display to the effect

15   that the document cannot be displayed is presented.

Control then proceeds to step S711. In order to

indicate at step S709a that the applicable document

could not be accessed, the thumbnail image is displayed

in black in the thumbnail mode and an indication to the

20   effect that the document is inaccessible is displayed in

the case of the list display.

It is determined at step S711 whether "DISPLAY ALL

DOCUMENTS CONTAINED IN SAME FOLDER" has been set in the

access content. If it has not been set, processing is

25   terminated. If it is determined at step S711 that

"DISPLAY ALL DOCUMENTS CONTAINED IN SAME FOLDER" has

been set, then the next document in the same folder is read in at step S712 while taking into consideration also the document ID value at the same storage location as that of the applicable document in the access key.

5   It is determined at step S713 whether read-in succeeded and, if failure is the decision, then control proceeds to step S714a. This means that the document has been deleted. If the decision rendered at step S713 is that read-in succeeded, then it is determined at step S713a

10   whether the all-version flag is ON or not. If the all-version flag is ON, i.e., if a version check will not be carried out, control proceeds directly to step S714. On the other hand, if the all-version flag is found to be OFF at step S713a, i.e., if a version check will be

15   carried out, control proceeds to step S713b. Here it is determined whether the version information of the ID that has been stored in the access key matches. Control proceeds to step S714a if a match is not achieved.

       The document is displayed at step S714 in

20   accordance with the display format. In order to indicate at step S714a that the applicable document could not be accessed, the thumbnail image is displayed in black in the thumbnail mode and an indication to the effect that the document is inaccessible is displayed in

25   the case of the list display. This is followed by step S715, at which it is determined whether all documents in

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the same folder have been read in, while taking into consideration also the document ID value at the same storage location as that of the applicable document in the access key. Processing is terminated if it is

5   determined that all documents have been read in. If it is determined at step S715 that all documents have not been read in, processing from step S712 onward is repeated.

In the case of the thumbnail display mode in the

10   processing described above, a folder ("α" in Fig. 6C) separate from the folder currently created as shown in Fig. 6C can be created and displayed inside, thereby making it possible to display the folder separately of the area currently open.

15   By virtue of the foregoing processing, icons or list items of a plurality of documents are displayed in a case where "DISPLAY ALL DOCUMENTS CONTAINED IN SAME FOLDER" has been specified. However, since the icon or list item of a specified document is enclosed by a red

20   border, as mentioned earlier, the user can distinguish this document at a glance.

In accordance with the above embodiment, as described above, only information such as the storage location of a document or the access privilege can be

25   transmitted as an access key by electronic mail to another person without transmitting the actual document

or a file that has been converted to an image, whereby it becomes possible to display, in a simple manner, the stored document based upon the access key that has been received.

5   Further, only the storage location (text data) of a document can be transmitted as the main body of electronic mail to another person, and the stored document can be acquired and displayed in a simple manner based upon the storage location that has been
10   received.

Furthermore, even if a person is not registered as a user with a database in which a document has been stored, it is possible to access the document through an access-key user that has been assigned to an access key.

15   The foregoing embodiment describes an operation performed in a thumbnail display area. However, if a similar operation is performed in a list display area, similar results will be displayed based upon the list display.

20   Further, it is possible to obtain a set-up in which only the same version of a document identical with a document designated by the transmitting party can be accessed [this is a case where the "APPLICABLE-DOCUMENT ALL-VERSION ACCESS ENABLE (508) FLAG" is OFF and,
25   moreover, the "SAME-FOLDER ALL-DOCUMENT DISPLAY (503) FLAG" is ON].

Further, it is possible to obtain a set-up in which any version only of a document identical with a document designated by the transmitting party can be accessed [this is a case where the "APPLICABLE-DOCUMENT ALL-VERSION ACCESS ENABLE (508) FLAG" is ON and, moreover, the "SAME-FOLDER ALL-DOCUMENT DISPLAY (503) FLAG" is OFF].

Further, it is possible to obtain a set-up that allows access only to all documents of the same version, which exist when the transmitting party specifies a document, in a folder that same as that of the document when the transmitting party specifies the document. In other words, it is possible to construct an environment identical with that of the document being accessed by the transmitting party [this is a case where the "APPLICABLE-DOCUMENT ALL-VERSION ACCESS ENABLE (508) FLAG" is OFF and, moreover, the "SAME-FOLDER ALL-DOCUMENT DISPLAY (503) FLAG" is ON].

Further, it is possible to obtain a set-up in which all documents of all versions that exist in a folder the same as that of the document specified by the transmitting party is accessed [this is a case where the "APPLICABLE-DOCUMENT ALL-VERSION ACCESS ENABLE (508) FLAG" is ON and, moreover, the "SAME-FOLDER ALL-DOCUMENT DISPLAY (503) FLAG" is ON].

According to the embodiment, it is assumed that the

side storing the documents retains all versions.

However, the present invention is applicable also in a

case where, when update processing has been applied to

documents, only the latest documents remain. This

5   merely represents a state in which only the latest

versions of documents are available.

It goes without saying that the object of the

invention is attained by supplying a storage medium

storing the program codes of the software for performing

10   the functions of the foregoing embodiment to a system or

an apparatus, reading the program codes with a computer

(e.g., a CPU or MPU) of the system or apparatus from the

storage medium, and then executing the program codes.

In this case, the program codes read from the

15   storage medium implement the functions of the

embodiment, and the storage medium storing the program

codes constitutes the invention. By reading the program

into the system or apparatus from the storage medium,

the system or apparatus will operate in accordance with

20   a predetermined method.

Further, the storage medium for supplying the

program code can employ a floppy disk, hard disk,

optical disk, magneto-optical disk, CD-ROM, CD-R,

magnetic tape, non-volatile type memory card or ROM.

25   Furthermore, besides the case where the aforesaid

functions according to the embodiments are implemented

by executing the program codes read by a computer, it goes without·saying that the present invention covers a case where an operating system or the like running on the computer performs a part of or the entire process in accordance with the designation of program codes and implements the functions according to the embodiments.

It goes without saying that the present invention further covers a case where, after the program codes read from the storage medium are written in a function expansion board inserted into the computer or in a memory provided in a function expansion unit connected to the computer, a CPU or the like contained in the function expansion board or function expansion unit performs a part of or the entire process in accordance with the designation of program codes and implements the function of the above embodiment.

In a case where the present invention is applied to the storage medium, program code corresponding to the flowcharts described earlier in Figs. 7, 8A and 8B is stored on this storage medium.

Thus, in accordance with the present invention, as described above, it is possible to transmit access information such as the storage location and access privilege of a document without transmitting the actual document or a file in which the document has been converted to an image as the access-key file by using

the electronic mail, thereby making it possible to display the document easily on the receiving side without increasing the load upon the electronic mail system.

5   Further, in accordance with the present invention, it is possible to transmit the storage location of a document as the main body of electronic mail so that the document can be displayed easily on the receiving side.

Further, in accordance with the present invention,
10   it is possible for a receiving party to gain temporary access to a document without requiring that the receiving party register as a user with the system in which the document has been stored.

Further, in accordance with the present invention,
15   it is possible for the transmitting side to limit the version of documents accessed by a receiving party.

Further, in accordance with the present invention, it is possible for a receiving party to access a document within a folder the same as that containing a
20   document specified by the transmitting party.

As many apparently widely different embodiments of the present invention can be made without departing from the spirit and scope thereof, it is to be understood that the invention is not limited to the specific
25   embodiments thereof except as defined in the appended claims.

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